Off–line Calibration/Monitoring

List of tasks

Calibration

        – Calorimeter level energy scale

                –> Initial calibration with test–beam, source, etc

                –> in–situ (isolated particles, gamma/Z+jet, mass(jj)

                –> jets/MET energy scale

Monitoring

        –> synchronization

        –> dead/hot channels

        –> radiation damage

Software tools and data maintenance

        –> bookkeeping

        –> ORCA–DB interface

–> Jet / Missing ET energy scale

1. Jet energy correction (Erec/Egen)–recursive line.
    A. Silvia like: Egen is fixed – mean value of Erec.
    B. Andrei like: Erec fixed – mean Egen.
 for low and high luminosity and different jet finders
    – Andrei Krokhotine   on–going task

2. Development of jet correction with readout weights – done
                                (CMS NOTE 2002/023)
        Irina Vardanian, Olga Kodolova, Alexei Oulianov,
        S.Kunori

Resume: no gain in comparison with more simple corrections in (1).

3. Dependance of resolution on cone size with/without pile–up.
                                in progress
        Irina Vardanian, Olga Kodolova, Alexei Oulianov

Gamma/Z + jet channel   CMS NOTE in preparation.

5. Production of gamma+jet and Z+jet for calibration

Igor Lokhtin, V.Konopliannikov,

E.Tikhonenko, V. Kolosov, O.Kodolova, N.Kruglov, N.Lvova–

production.

6. Evaluation of backgrounds for gamma+jet with CMSIM

IN2002/014

V.Konopliannikov, E.Tikhonenko, V.Palichik, O.Kodolova

with low luminosity pile up with ORCA– Internal Note submitted

7. Evaluation of systematical errors for gamma+jet calibration

Internal Note – submitted

V.Konopliannikov, A.Urkinbaev, O.Kodolova

8. The possibility of calibration with gamma+jet channel

Internal Note – submitted

V.Konopliannikov, A.Urkinbaev, O.Kodolova

9. The rates for gamma+jet channel – included in DAQ TDR

A. Oulianov

9. Jet corrections at high luminosity and heavy ions – to be done
(need to check jet finder with pile–up subtraction)
A. Oulianov, A.Krokhotine, I.Vardanian, O.Kodolova

10. Using tracker information for jet energy corrections
D.Green, I.Vardanian, O.Kodolova
with Physics Objects group (A.Nikitenko)
methodology and algorithm
CMS NOTE – submitted
N.Ilyina – application to H–tau tau channel – to be done

11. Implementation jet corrections with tracker in ORCA.
Common frame for object – O.Kodolova
Trackfinding (global, regional, partial etc) – L.Fano
Calorimeter object (cluster around entry point) – B. Van de Vivier
Library of responses for single particles using tracker
information – I.Vardanian
The rate of isolated particles – S.Petrouchanko

12. Support jet energy correction algorithms in ORCA – A.Oulianov

12. **How to use mean Et in eta (pile up and HIC) in calibration
     – S.Petrouchanko, K. Teplov**

13. **Mass (jj) for W from top decay – Suman Bala**

14. **Trigger requirements and fast off–line event selectionsfor all in–situ
    calibration samples
    Evaluating the numbers of events/per month (?) at low and high
    luminosity – ?
    isolated paticles – S.Petrouchanko
    gamma/Z+jet – A.Oulianov, V.Konopliannikov, A.Urkinbaev
    W–>jj from top– decay – Suman Bala (?)
    Z–>jj**

−> **Radiation damages, monitoring and recalibration**

15. **Simulation of radiation damages in HE scitillating tiles.**
A.Krokhotine,V.Palichik,V.Gavrilov,V.Kryshkin,I.Golutvin,
O.Kodolova (CMS NOTE 2002/013)

16. **Basing on the results of the fiber radiation damage measurements simulate the suggested scenario of the HF recalibration with the source simultaneously with the control measurements by the LED/laser system (Erchov, Gribushin) NOTE in preparation**

17. **Using M.−C. simulation of the HF operation determine the method of the calibration constant correction for two variants: permanent correction at the on−line operation (for the using of HF in the trigger) and long−term precision correction for off−line data processing (Erchov, Gribushin)**

18. **investigate possibility to use neutron monitors for the permanent monitoring of HF operation (Erchov, Gribushin)**

19. **Non−instrumental gaps in HF, influence on the calibration −
V.Kolosov**

Calibration

Calorimeter level energy scale
    initial calibration: test beam+source
    verify QC during HCAL construction
Object level energy scale (Jet/Met)
    Simple /use of tracks/In−situ/pileup

Monitoring

Synchronization
Gain change,Dead/sick channels
Radiation damage

Software tools

Database
Interface
DSC/DAQ−DB interface
ORCA−DB interface

Data Collection and maintenance

− candidates −

− PRS −   − DCS −

A.Gribushin   P.DeBarbaro

H.Budd   V.Bernes

I. Vardanyan

A.Kokhotine

P.Hidas

V.Konnopianikov

A.Yershov   V.Hagopian

A.Krokhotine

K.Teplov

A.Krokhotine

A.Oulianov

T.Kramer

S.Abdullin

Need more names,

Esp. from HB/HO

Nearest future task:

Establish organization and connection with DCS

    Participate in DCS group activity:

        Verify QC during HCAL construction – collect all source data, analyze and put them in DB – on going

        HB/HF test–beam in 2002: the data with beam and source

Software simulation and reconstruction with "HCAL in ORCA" group

        Interface in ORCA for calibration data – off–line calibration database Alexei Oulianov

Plan to measure radiation damages in tiles (in Kharkov)

Determine recalibration methodology.

Evaluate numbers per tower and per month (?).

1. Determine the number of isolated partciles for low and high luminosity e/pi ratio for different energy, mean response in maximal tower (|eta|<2.4)

2. Determine the number of isolated muons for low and high luminosity. error in MIP signal

3. Determine the mean response from pile−up.

4. Determine the mean response for gamma/Z+jet for maximal tower of jet

   Include radiation damages for HE/HF

Repeat items 1)−4)

Find correction factor from maximal tower.

17. Interface in ORCA for calibration data – off–line calibration database   Alexei Oulianov